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ABSTRACT

This basic instructional guide for an agricultural production program is one in a series of such guides for agricultural education. It is useful in developing and selecting instructional material and implementing competency-based education for a program directed toward helping students to become proficient in animal, plant, and soil sciences and in farm business management and agricultural mechanics. Introductory materials include a listing of related Dictionary of Occupational Titles job titles, overview of the program, and description of the program. Course descriptions and content outlines are then provided for each of the three courses in this program: agricultural production technology III, agricultural production management IV, and operating the farm business V. A content outline is also presented for livestock production. These competencies may be integrated into the instructional sequence for agricultural production III, IV, and V according to student needs. Appendixes include a tool and equipment list, resources for livestock production, resources for agricultural production, and recommended facility plans and inclusions. (YLB)

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AGRICULTURAL PRODUCTION

AN ADMINISTRATIVE GUIDE FOR AGRICULTURAL EDUCATION

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1988

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AGRICULTURAL PRODUCTION

An Administrative Guide

for

Agricultural Education

Prepared by

Virginia Vocational Curriculum and Resource Center
Henrico County Public Schools
Department of Vocational and Community Education
Glen Allen, Virginia 23060

In cooperation with

Agricultural Education Service
Virginia Department of Education
Division of Vocational Program Services
Richmond, Virginia 23216

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The contents of this administrative guide were extracted from the Task Analyses for Livestock Production and the Task Analyses for Agricultural Production.

The Task Analyses for Livestock Production was based on an instructional resource guide developed by Claude A. Morris, Vocational Agriculture Instructor, and Jodi Maxey, Horticulture Instructor, Prince Edward County High School, under the direction of Leon A. Morton, Director of Vocational Education, Prince Edward County; and John D. Miller Jr., Vocational Guidance Counselor, Prince Edward County High School.

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INTRODUCTION

The course content in this document is extracted from the Task Analyses for Agricultural Production and Task Analyses for Livestock Production. These publications contain curriculum materials applicable to the entire state; therefore, localities should select the instructional areas appropriate for their respective communities. No one agricultural education department will be able to offer all of the material outlined in this document. Other instructional areas should not have to be added, but unit plans and lesson plans developed by individual teachers may require additional competency-based performance objectives and criterion-referenced measures.

The curriculum for agricultural production is based on the assumption that students who enroll in the course have completed Agricultural Mechanics and Basic Plant Science and Agricultural Mechanics and Basic Animal Science. The major emphasis in agricultural production is directed toward helping students to become proficient in animal, plant, and soil sciences, and in farm business management and agricultural mechanics.

Individuals engage in agricultural production at different levels of employment, including owner-operator, manager, tenant, technician, and laborer. Because knowledge and skills required at different levels of employment vary, educational programs designed to prepare and upgrade individual workers also must vary in length and level of instruction.

Since the first courses were offered in agricultural education in high school, major emphasis has been placed on agricultural production. The course content was determined primarily by the problems of the small family farm unit. During the past half century, however, major changes have occurred in farming. Mechanical power has replaced animal power. Scientific developments have had far-reaching effects on soils, fertilizer, and plant and animal life. Cross breeding, hybridization, synthetics, vitamins, antibiotics, miracle drugs, pesticides, chemicals, and other new materials and methods play important roles in modern agricultural progress. These changes have caused a shift of emphasis toward specialization rather than generalization.

It is recognized that there always will be a need for updating and revising this administrative guide. The content of this guide and the local teaching calendar should be coordinated with the local advisory committee in determining what is to be taught at the individual school level.

GUIDE APPLICATION

This administrative guide is based on the following Dictionary of Occupational Titles (DOT) job titles in the occupational domain of agricultural production:

DOT Job Title	DOT Code
General Manager, Farm	180.167-018
Group Leader	180.167-022
Manager, Dairy Farm	180.167-026
Manager, Poultry Hatchery	180.167-046
Barn Boss	410.131-010
Fur Farmer	410.161-014
Livestock Rancher	410.161-018
Lamber	410.364-010
Farmworker, Livestock	410.664-010
Animal Caretaker	410.674-010
Cowpuncher	410.674-014
Livestock-Yard Attendant	410.674-018
Stable Attendant	410.674-022
Farmworker, Dairy	410.684-010
Sheep Shearer	410.684-014
Milker, Machine	410.685-010
Goat Herder	410.687-014
Sheep Herder	410.687-022
Poultry Farmer	411.161-018
Farmworker, Poultry	411.584-010
Laborer, Poultry Farm	411.687-018
Laborer, Poultry Hatchery	411.687-022
Poultry Debeaker	411.687-026
Bee Keeper	413.161-010
Farmer, General	421.161-010
Farmworker, General 1	421.683-010
Farmworker, General 2	421.687-010
Fish Farmer	446.161-010
Sales Representative, Animal-Feed Products	272.357-010
Farmer, Cash Grain	401.161-010
Farmworker, Grain 1	401.683-010
Farmworker, Grain 2	401.687-010
Farmer, Vegetable	402.161-010
Farmworker, Vegetable 1	402.663-010
Farmworker, Vegetable 2	402.687-010
Harvest Worker, Vegetable	402.687-014
Supervisor, Tree-Fruit-and-Nut Farming	403.131-010

DOT Job Title	DOT Code
Supervisor, Vine-Fruit Farming	403.131-014
Farmer, Tree-Fruit-and-Nut Crops	403.161-010
Farmer, Vine-Fruit Crops	403.161-014
Farmworker, Fruit 1	403.683-010
Farmworker, Fruit 2	403.687-010
Harvest Worker, Fruit	403.687-018
Vine Pruner	403.687-022
Farmer, Field Crop	404.161-010
Farmworker, Field Crop 1	404.663-010
Farmworker, Field Crop 2	404.687-010
Harvest Worker, Field Crop	404.687-014
Farmer, Diversified Crops	407.161-010
Farmworker, Diversified Crops 1	407.663-010
Farmworker, Diversified Crops 2	407.687-010
Sprayer, Hand	408.684-014
Farm-Machine Operator	409.683-010
Field Hauler	409.683-014
Irrigator, Value Pipe	409.684-010
Irrigator, Sprinkling System	409.685-014
Farmworker, Machine	409.686-010

This guide is of use in developing and selecting instructional materials and in implementing competency-based education for the following program and courses:

Program	Courses
Agricultural Production (01.0301)	Agricultural Production Technology (III) 8010 Agricultural Production Management (IV) 8012 Operating the Farm Business (V) 8014

Additional information concerning the application and use of this publication may be obtained from the following office:

Agricultural Education Service
Vocational and Adult Education
Department of Education
P.O. Box 6Q
Richmond, Virginia 23216

OVERVIEW OF THE PROGRAM

This guide reflects certain basic facts that affect agricultural education. They include the following:

- The job of preparing individuals to engage in farming is of more importance and is more complicated and difficult than ever before. Although the percentage of the population engaged in farming has decreased, the quality of products and efficiency of production must be improved constantly.

- The influence of science and technology necessitates greater emphasis in farm management and agricultural mechanics. More attention must be given to teaching basic principles upon which sound management decisions are based.

- The family farm is still an important unit in Virginia agriculture. Agricultural education should continue to contribute to the development of the farm family unit.

- In many communities the agricultural education program should give attention to the needs of people who work at two jobs: farming and other employment.

- Agricultural education provides valuable training for students who plan to attend college. Youths must be given the opportunity to explore and discover their interests and abilities. For many of them, their only experience with actual farming before they reach the age of 18 will be through their supervised occupational experience programs.

- Agricultural education offers an opportunity for making the life sciences and other high school courses more meaningful to many students. Biology, chemistry, physics, mathematics, economics, English, and other subjects can be related to the supervised occupational experience programs and problems in agriculture.

- Farming is changing so rapidly that much of the vocational training in agriculture must be done through continuing education. Out-of-school agricultural education for young and adult farmers, including individual on-farm instruction, is essential.

- Supervised occupational experiences in agricultural production may be carried out on the home farm, at the school, or through cooperative programs. High school students need to learn, through actual practice, the basic skills and understanding essential to successful entry into farming.

- The Future Farmers of America (FFA) organization is an integral part of agricultural education. The purposes of the organization are to develop leadership, citizenship, and cooperation. These purposes are well suited to meet the needs of all students enrolled in agricultural education, regardless of their occupational choices.

- The need for capable leadership in agriculture is urgent. Therefore, agricultural education teachers and others should provide guidance and counseling so that students may realize their fullest potential in the industry of agriculture.

PURPOSES

1. To prepare high school students for proficiency and establishment in agricultural production.

2. To prepare students for the successful analysis and management of farm business.

3. To provide a sound background for continuing education in agriculture.

4. To develop worthy use of leisure time and the desired cultural practices in family living and community responsibility.

This program is designed to cover two or three years, depending upon completion of Agricultural Mechanics and Basic Plant and Animal Science. If Agricultural Mechanics and Basic Plant Science is offered in the eighth grade, three years will be available in the option. If it is started in the ninth grade, only two years will be available.

SECONDARY PROGRAM AND COURSES

PROGRAM TITLE: AGRICULTURAL PRODUCTION

DESCRIPTION: The curriculum for the three production courses is based on the assumption that students have completed the courses of Agricultural Mechanics and Basic Plant and Animal Science. The major emphasis is directed toward helping students become more proficient in animal, plant, and soil sciences and in farm business management and agricultural mechanics. Leadership training is provided, and supervised occupational experience programs are incorporated whenever possible.

CIP CODE: 01.0301

SUGGESTED GRADE LEVELS: 10, 11, 12

APPROVED COURSES	VA COURSE CODE
Agricultural Production Technology III	8010
Agricultural Production Management IV	8012
Operating the Farm Business V	8014

AGRICULTURAL PRODUCTION TECHNOLOGY III (8010)

COURSE DESCRIPTION: Agricultural Production Technology is a one-year occupational preparation course offered at the tenth- or eleventh-grade level. When only single periods are provided, greater emphasis is placed on individualized instruction and supervised occupational experience programs. The major emphasis in the agricultural production program is the attainment of competencies in one or more areas of plant science, animal science, soil science, agricultural business management, and agricultural mechanization, based upon the student's employment objective. The course includes appropriate instruction in agricultural mechanics, crop production, farm family living, and basic farm management. Supervised occupational experience programs and leadership training are important parts of the course.

PREREQUISITE: Agricultural Mechanics and Basic Animal Science

SUGGESTED GRADE LEVEL: 10 or 11

AGRICULTURAL PRODUCTION TECHNOLOGY III (8010)

CONTENT OUTLINE

I. ORIENTING THE STUDENT TO AGRICULTURAL PRODUCTION

- A. Departmental policies
- B. Safety procedures
- C. Maintenance procedures
- D. Occupational tasks
- E. FFA membership

II. DEVELOPING LEADERSHIP SKILLS

- A. FFA officers
- B. Oral presentation
- C. Panel discussion
- D. News release
- E. Committee meeting

III. USING MECHANICS IN AGRICULTURAL PRODUCTION

- A. Electrical systems
- B. Construction plans
- C. Farm equipment

IV. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION

- A. Map interpretation
- B. Disease control
- C. Growing crops
- D. Crop exhibit

V. MANAGING NATURAL RESOURCES

- A. Relationship of agriculture and environment
- B. Pollution problems
- C. Water use
- D. Water pollution
- E. Soil conservation
- F. Government organizations
- G. Wildlife management
- H. Pond construction
- I. Forests
- J. Fire control

VI. MAINTAINING THE HOME LAWN

- A. Planting preparations
- B. Growing plants
- C. Disease/insect control
- D. Tree/shrub maintenance

VII. MANAGING FAMILY RESOURCES

A. Family budget

B. Personal/family goals

C. Safety survey

D. Use of time

VIII. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

A. Financial goals

B. Farm enterprise

C. Livestock program

D. Breeding services contract

E. Livestock improvement

F. Insurance coverage

AGRICULTURAL PRODUCTION MANAGEMENT IV (8012)

COURSE DESCRIPTION: Agricultural Production Management is a one-year occupational course offered at the eleventh- or twelfth-grade levels. The course includes instruction in agricultural mechanics, with emphasis placed on the application of mechanical skills to farm power and machinery, soil and water management, supervised farming programs, and leadership training.

PREREQUISITE: Agricultural Production Technology III (8010)

SUGGESTED GRADE LEVEL: 11 or 12

AGRICULTURAL PRODUCTION MANAGEMENT IV (8012)

CONTENT OUTLINE

I. ORIENTING THE STUDENT TO AGRICULTURAL PRODUCTION

- A. Departmental policies for classroom procedures (review as needed)
- B. Occupational tasks
- C. FFA membership

II. USING MECHANICS IN AGRICULTURAL PRODUCTION

- A. Electrical systems
- B. Construction plans
- C. Irrigation systems
- D. Farm equipment

III. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION

- A. Disease control
- B. Planting preparations
- C. Growing crops
- D. Crop management
- E. Crop cultivation

IV. MANAGING FAMILY RESOURCES

A. Community improvement

B. Homestead improvement

V. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

A. Rent/lease agreements

B. Ownership transfer

C. Livestock feeding program

D. Livestock marketing plan

E. Livestock insurance

F. Financial calculations

G. Service contracts

VI. PRODUCING POULTRY

A. Breeds

B. Feeding practices

C. Marketing plan

D. Disease/parasite control

E. Management

VII. MANAGING AN APIARY

A. Site selection

B. Equipment and supplies

C. Honeybee stock

VII. MANAGING AN APIARY (continued)

D. Feeding

E. Disease, insects, parasite control

F. Marketing plan

OPERATING THE FARM BUSINESS V (8014)

COURSE DESCRIPTION: Operating the Farm Business is a one-year occupational preparation course offered at the twelfth-grade level. Much of the instruction may be provided through individualized instruction. Emphasis is placed on establishment in farming, farm management, and occupational experience. Students receive instruction in adjusting, operating, and maintaining farm machinery and equipment and in planning and constructing farm buildings and facilities. Continued emphasis is placed on leadership training.

PREREQUISITE: Agricultural Production Management IV (8012)

SUGGESTED GRADE LEVEL: 12

OPERATING THE FARM BUSINESS V (8014)

CONTENT OUTLINE

I. ORIENTING THE STUDENT TO AGRICULTURAL PRODUCTION

- A. Departmental policies for classroom (review as needed)
- B. Occupational tasks
- C. FFA membership

II. USING MECHANICS IN AGRICULTURAL PRODUCTION

- A. Electrical systems
- B. Construction plans
- C. Irrigation systems
- D. Farm equipment

III. USING PLANT SCIENCE IN AGRICULTURAL PRODUCTION

- A. Map interpretation
- B. Disease control
- C. Crop cultivation
- D. Crop exhibit

IV. MANAGING NATURAL RESOURCES

- A. Water use
- B. Soil conservation

IV. MANAGING NATURAL RESOURCES (continued)

C. Pond maintenance

D. Wildlife management

E. Growing Christmas trees

F. Timber management

G. Fire control

V. OPERATING THE FARM AS AN AGRICULTURAL BUSINESS

A. Labor management

B. Livestock program

C. Expansion plan

D. Tax records

E. Credit plan

F. Bestowing estate

VI. PRODUCING POULTRY

A. Breeds

B. Feeding practices

C. Marketing plan

D. Disease/parasite control

E. Management

VII. MANAGING AN APIARY

A. Site selection

B. Equipment and supplies

VII. MANAGING AN APIARY (continued)

C. Honeybee stock

D. Feeding

E. Disease/insect/ parasite control

F. Marketing plan

LIVESTOCK PRODUCTION

CONTENT OUTLINE

Note: The competencies identified in the following outline may be integrated into the instructional sequence for Agricultural Production III, IV, and V according to the needs of students and the local community.

I. PERFORMING GENERAL LIVESTOCK DUTIES

- A. Livestock identification
- B. Livestock castration
- C. Livestock restraint
- D. Livestock bedding
- E. Livestock loading procedure
- F. Livestock injury treatments (disinfectants)
- G. Livestock parasite control
- H. Livestock vaccination
- I. Livestock diseases and treatments
- J. Dead livestock disposal
- K. Livestock fitting and showing
- L. Livestock production records
- M. Farm income/expense records

II. RAISING BEEF CATTLE

- A. Selection
- B. Criteria used to cull undesirable cows
- C. Controlled seasonal breeding program

II. RAISING BEEF CATTLE (continued)

D. Signs of heat in cows*

E. Signs of pregnancy in cows*

F. Calf delivery assistance*

G. Care of newborn calves*

H. Calf-weaning procedure*

I. Creepfeeding of calves*

J. Dehorning procedure*

K. Feeding program

L. Herd bull management

M. Beef production operational costs

III. RAISING DAIRY CATTLE

A. Ideal dairy animal selection

B. Breeding program

C. Artificial insemination

D. Fertility improvement program

E. Heifer replacement plan

F. Extra teat removal

G. Dry cow management

H. Mastitis control

I. Hoof trimming

J. Clipping procedures

*Competency common to both beef and dairy cow operations

III. RAISING DAIRY CATTLE (continued)

K. Milk quality assurance

L. Milking equipment operation

M. Cleaning of vacuum lines

N. Recommended milking practices

O. Dairy cow nutrient requirements

P. Dairy cow feed rations

Q. Dairy cattle housing

IV. RAISING SWINE

A. Swine production systems

B. Swine selection

C. Breeding stock selection

D. Breeding management

E. Sow/gilt management during breeding and gestation

F. Sow management during farrowing and lactation

G. Boar management

H. Care of baby pigs from birth to weaning

I. Weaning procedure

J. Swine housing

K. Waste management

L. Nutrient requirements and sources

M. Marketing of slaughter hogs

N. Markting of feeder pigs

V. RAISING HORSES

A. Horse selection criteria

B. Age determination

C. Measurements used to describe horses

D. Horse grooming procedures

E. Foot care

F. Training procedures

G. Breeding program

H. Care of foal from birth to weaning

I. Weaning procedures

J. Stallion maintenance

K. Nutritional requirements

L. Horse health maintenance

M. Horse markets

N. Tack

VI. RAISING SHEEP

A. Sheep selection

B. Lambing system selection

C. Ram management

D. Breeding management practices

E. Lambing procedures

F. Care of lambs from birth to weaning

VI. RAISING SHEEP (continued)

G. Sheep health maintenance

H. Feed requirements

I. Housing and equipment

J. Sheep marketing procedures

K. Wool shearing operations

L. Wool marketing operations

APPENDICES

Appendix A	Tool and Equipment List
Appendix B	Resources for Livestock Production
Appendix C	Resources for Agricultural Production
Appendix D	Recommended Facility Plans and Inclusions

APPENDIX A

TOOL AND EQUIPMENT LIST

Adjustable Metal Stands
Air Compressor
Anvil
Auger - PTO
AVR Tester
Awls
Battery Charger
Battery Charger Accessories
Battery Service Kits
Battery Starter Tester
Battery Testers
Bevels
Blade - Scraper
Branding Sets
Buckets
Bushing Inserter and Remover
Calipers
Cam Shaft Bearing Tools
Chain Hoist
Chisels
Cold Frames
Clamps (various)
Combination Analyzer
Compass, Surveying and Staff
Crane, Portable Hydraulic
Creeper
Cultivators
Current Indicator
Cutters (bolt, pipe, tubing)
Cyclone Spreader
Cylinder Sleeve Puller
Disk Harrows
Drain Pan
Drills
Drop Spreader
Dynamometer, Tractor PTO
Electric Clippers
Electric Groomer
Electrical Kits
Engine Analysis Test Equipment

Engine Repair Stand
Farm Level, Telescopic and Tripod
Files (various)
Flaring Tool
Funnels
Greenhouse
Greenhouse Air Circulation System
Greenhouse Automatic Cooling System
Greenhouse Automatic Ventilation Equipment
Greenhouse Benches
Greenhouse Pot Moving Carts
Grinder, Compost
Guns (caulking, grease, soldering, staple, etc.)
Hammers (ball peen, claw, machinist's riveting, sledge, soft face, tack)
Heating Tables with thermostats
Hive, Standard or all weather
Hoes
Hoist
Honey Extractor (centrifugal)
Hose (garden, rubber)
Hot Beds
Hydraulic System Tester
Hydraulic Tester Accessories
Hydro-Flator
Ignition Simulator
Ignition Tester
Incandescent Photoperiod Lights
Ladder
Lathe House
Lawn Edger/Trimmers
Lawn Roller
Lawn Vacuum
Levels (surveyor, carpenter's, line)
Livestock Chute
Livestock Scale
Magnetic Ignition Analyzer
Mask Respirators with cartridges
Micrometer
Mitre Box
Mobile Floor Jack
Oil Seal Installer
Oilers
Oscilloscope, Engine Analyzers

Paint Brushes
Pliers (various)
Planes (bench, block, jack)
Plows
Portable Floor Crane
Pullers, Bearing, Hydraulic Ram and Pump (set)
Saws (back, chain, compass, crosscut,
hack, keyhole)
Screwdrivers (various)
Soldering Iron
Stud Remover
Surveying Chain
Tachometer
Testers, Combustion Analyzer
Testers, Vacuum Fuel Pump
Tie Rod Separator
Timing Light
Vaccinating Instruments (set)
Valve Refacing Lathe
Vises (drill press, machinist's, pipe,
woodworking)
Welder (arc, oxygen-acetylene)
Welding Accessories
Wheelbarrows
Wrenches (various)

APPENDIX B

SUGGESTED RESOURCES

This appendix includes a list of references used to prepare the Task Analyses for Livestock Production, a list of additional references identified by teachers as being helpful in developing competency-based instruction in livestock production and managment, and a list of suggested audiovisual aids and their suppliers.

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Agricultural Business Instructional Resource Guide. Richmond: Virginia Department of Education, 1983.

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Feed Formulations. Perry, T. W. The Interstate Printers & Publishers, Inc., Danville, Illinois, 1975.

Feeds and Nutrition. Ensminger, M. E., and Olentine, C. G. Ensminger Publishing Co., Clovis, California, 1978.

Handbook of Livestock Equipment. Juergenson, E. M. The Interstate Printers & Publishers, Inc., Danville, Illinois, 1979.

Livestock--Judging, Selection and Evaluation. Hunsley, R. E.; Beeson, W. M.; and Nordby, J. E. The Interstate Printers & Publishers, Inc., Danville, Illinois, 1970.

Merck Veterinary Manual. Siegmund, O. H. Merck & Co. Inc., Rahway, New Jersey, 1979.

Working in Animal Science. Christenson, P., and Nelson, E. A. Gregg Division, McGraw-Hill Book Company, New York, 1978.

B. Student Materials

The following student materials, published by Vocational Instructional Services, Texas A&M University, College Station, Texas, are recommended in addition to those listed in the bibliography.

Animal Reproduction
Artificial Insemination
Breeding Systems
Breeds of Dairy Cattle
Breeds of Horses
Breeds of Sheep
Breeds of Swine
Carcass Evaluation
Carcass Judging and Grading
Care of Livestock at Parturition
Circulatory and Respiratory Systems
Digestive Systems
Genetics
Injection Procedures
Live Animal Judging and Grading
Methods of Breeding Livestock
Performance and Production Testing
Planning Livestock Facilities
Pregnancy Diagnosis (Palpation)
Rations
Skeletal and Muscular Systems
Supervised Experience Program Record Book for Production Agriculture
V.A. I. Animal Science (Technical Information--includes 99 transparency masters)
V.A. II Animal Science (Technical Information--includes 116 transparency masters)

III. Audiovisual Materials

This section contains listings of audiovisual materials identified by teachers as being useful in implementing competency-based instruction in Livestock Production.

A. Division of Media and Instructional Technology, Virginia Department of Education, P.O. Box 6Q, Richmond, VA 23216

16mm Films

Agricultural Chemicals--Resistance of Insects to Insecticides
Agricultural Chemicals--Selecting Nonchemical Methods of Insect Control
Agriculture Machine Maintenance
Back the Attack on Brucellosis
Cattle and the Corn Belt--The Midwest
Cattleman--A Rancher's Story
Dairy Farm Today
Dairy Products--From Moo to You
Farm Babies and Their Mothers
Farrowing Pigs
Hog Sanitation with Concrete
Meat, Milk, and Money with Livestock on Concrete
Our Changing Way of Life--The Dairy Farmer
Pork--The Meal with the Squeal
Pride--The Saddle Horse
Sheep--How They Live
Three More Little Pigs Go to Market
Venezualan Equine Encephomyelitis--A National Emergency
Your Lamb Goes to the Fair

B. Vocational Agriculture Service, 434 Mumford Hall, Urbana, IL 61801

Filmstrips/Cassettes

Aberdeen Angus Judging Classes
Appraising Market Hogs for Carcass Merit
Breeds of Dairy Cattle
Breeds of Swine
Dehorning Cattle
Holstein Judging Classes

Filmstrips/Cassettes (continued)

Identification of Kinds of Meat
Identification of Pork Cuts
New and Exotic Breeds of Cattle
Pests of Cattle
Selecting Beef Breeding Animals
Swine and Pork Carcass Grades
USDA Grades of Beef

Slides/Cassettes

Swine Facilities

C. Vocational Education Productions, California Polytechnic State University, San Luis Obispo, CA 93407

Filmstip/Cassettes

Artificial Insemination of Beef and Dairy Cattle
Beef Cattle Body Types
Beginner's Guide to Buying a Horse
The Brood Sow and Litter
Embryo Transfer of Beef and Dairy Cattle
Identification of Beef Cuts
Introduction to Swine Management
Swine Health Care

Slides

Beginner's Guide to Buying a Horse
Horse Breeds and Color Type

D. Nasco Agricultural Sciences, 1524 Princeton Avenue, Modesto, CA 95352

Filmstrips/Cassettes

Artificial Breeding of Dairy Cattle
Breeds of Beef Cattle
Judging Dairy Cattle
Raising Dairy Calves
Vaccinating Methods

Slides

Diseases in Feeder Cattle
Judging Livestock

E. Prentice-Hall Media, 150 White Plains Road, Tarrytown, NY 10591

16mm Films

An Introduction to Sheep Breed Identification
Nutrition and Health in Sheep
Production Systems for Sheep
Sheep Reproduction and Management

Filmstrips/Cassettes

Beef Breed Selection
British Breeds
Boar Selection
Continental Breeds
Dairy Breeding Systems
Dairy Breed Selection
Female Selection in Swine
An Introduction to Swine Breed Identification
Selecting Dairy Females
Selecting Beef Females
Selecting Beef Sires and Crossbreeds
Swine Breeding Systems

F. Hobar Publications, Colonial Films, Inc., Atlanta, GA

Filmstrip/Cassette

Black Leg

Slides/Cassettes

Artificial Insemination in Beef Cattle
Baby Pig Management and Skills
Beef Facilities
Ruminant Stomachs

8mm Film

Good Milking Procedures

IV. Computer Software

The following software applications are identified in the Summer/Fall 1987 Computer Software Catalog from the American Association for Vocational Instructional Materials (AAVIM). They were not included in the Task Analyses for Livestock Production. Refer to the catalog for complete descriptions, specific hardware requirements, price lists, ordering information, and software review policies. The catalog can be obtained by contacting AAVIM, 120 Driftmier Engineering Center, Athens, GA 30602.

A. Agricultural Sciences Review. Hobar Publications. (Apple II, TRS-80, IBM-PC)

Beef Production (450 questions)
Dairy Production (450 questions)
Dairy Production (450 questions)
Livestock Diseases and Parasites (300 questions)
Milk and Milk Quality (350 questions)
Sheep Production (400 questions)
Swine Production (450 questions)

B. Computer Simulations and Tutorials

Calf Crop. Hobar Publications. (TRS-80, IBM-PC)
Cattle Weight Adjustments. Agricultural Computer Services. (No hardware specifications given)
Dairy Ration Master. Agri-Comp Systems. (Apple II)
Hay Purchase. Agricultural Computer Services. (Apple II, TRS-80)
Livestock Management Games. Agricultural Computer Services. (Apple II, TRS-80)

1. Cattle Game
2. Dairy Game
3. Sheep Game
4. Swine Game

Livestock Production Programs. Agri-Comp Systems. (Apple II)

1. Beef Production
2. Dairy Production
3. Feeds and Feeding
4. Horses
5. Meats
6. Sheep Production
7. Swine Production

Project Animals. Agricultural Computer Services. (Apple II, TRS-80)

1. Project Lamb
2. Project Hog
3. Project Steer

C. Agricultural Business

Agricultural Financial Calculations. Photocom. (Apple, IBM)

Introduction to Computers in Agribusiness. Agri-Comp Systems. (Apple II)

Management Calendar Creator. Hobar Publications. (Apple II)

Types of and Calculating Depreciation. Hobar Publications. (Apple II)

APPENDIX C

I. REFERENCES USED IN TASK ANALYSES FOR AGRICULTURAL PRODUCTION

Agricultural Shop Safety: Teacher's Guide. Clemson, South Carolina: Department of Agricultural Education, Clemson University, 1969.

American Association for Vocational Instructional Materials (AAVIM). Athens, Georgia.

Applying Pesticides.
Arc Welding.
Building Fences, 1974.
Construction: Basic Principles.
Crop Chemicals.
Developing Shop Safety Skills, 1984.
Electric Motors--Selection, Protection, Drives.
Electric Motors--Teacher Guide.
Electric Motors--Student Workbook.
Electrical Wiring, 3rd ed., 1985.
Farm Tractors: Preventive Maintenance.
Fuels and Lubricants, 1983.
How Electric Motors Start and Run, 1980.
Hydraulics: Hydraulic Systems for Tractors and Other Mobile Equipment, Vol. I: Care and Operation, 1974.
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Maintaining the Lighting and Wiring System, 1980.
Planning Fences, 1980.
Planning for an Individual Water System.
Planning for an Irrigation System, 1980.
Safety Color Coding for the Shop, 1982.
Selecting and Storing Fuels and Lubricants.
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Specifications for Tune-up and Service of Farm Tractors, 1982.
Tractor Maintenance, 1975.
Utility Buildings, 1974.

Bishop, Douglas D.; Chapman, Stephen R.; and Carter, Lark P. Working in Plant Science. New York, New York: McGraw-Hill Book Company, 1978.

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FFA Activity Handbook.
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The Calibration of Low Pressure Field Sprayers, 1981.
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Field Crop Nutrition.
Insect Pests of Field Crops and Stored Grains.
The Law and You.
Marketing Agricultural Products.
The Nursery Worker.
Seed Production of Corn, Soybeans, and Small Grains.
Teaching Tree Identification.
Tree Identification.
Using Savings and Checking Accounts.

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Common Problems of Soybeans.
Controlling Weeds.
Controlling Tree and Shrub Insects.
Corn Insects and Their Control.
Determining Credit Needs on the Farm.
Determining Probable Soil Losses in Conservation.
Factors Involved in The Borrowing Process.
Fertilizing and Watering Shade and Ornamental Trees.
Field Arrangement Principles.
Growing and Selling Christmas Trees.
Growing Flowering Annuals.
Hunger Signs in Crops.
Identifying Tree and Shrub Insects.
The Insect Identification Manual.
Nature of Soil Acidity and Major Plant Nutrients.
PH Test for Soil Acidity.
Planning the Cropping System.
Planning a Fertilizer Program.

Planning The Nitrogen Program.
Planning for Repayment of Loans.
Planting and Care of Farm Forests.
Pruning Shade Trees.
Sources of Farm Credit.
Using Conservation Tillage Systems.
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Wheat Diseases.

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II. AUDIOVISUAL SUPPLIERS

American Association for Vocational Instructional Materials (AAVIM)
120 Driftmier Engineering Center
Athens, Georgia 30602

Future Farmers of America
National FFA Supply Service
5632 Mt. Vernon Memorial Highway
Alexandria, Virginia 22309

HOBAR Publications
1234 Teller Road
St. Paul, Minnesota 55112

Ohio Agricultural Education Curriculum Materials Service
2120 Fyffe Road
The Ohio State University
Columbus, Ohio 43210-1099

Singer Career Systems
80 Commerce Drive
Rochester, New York 14623

Virginia Cooperative Extension Service
Virginia Polytechnic Institute and State University
Blacksburg, Virginia 24061

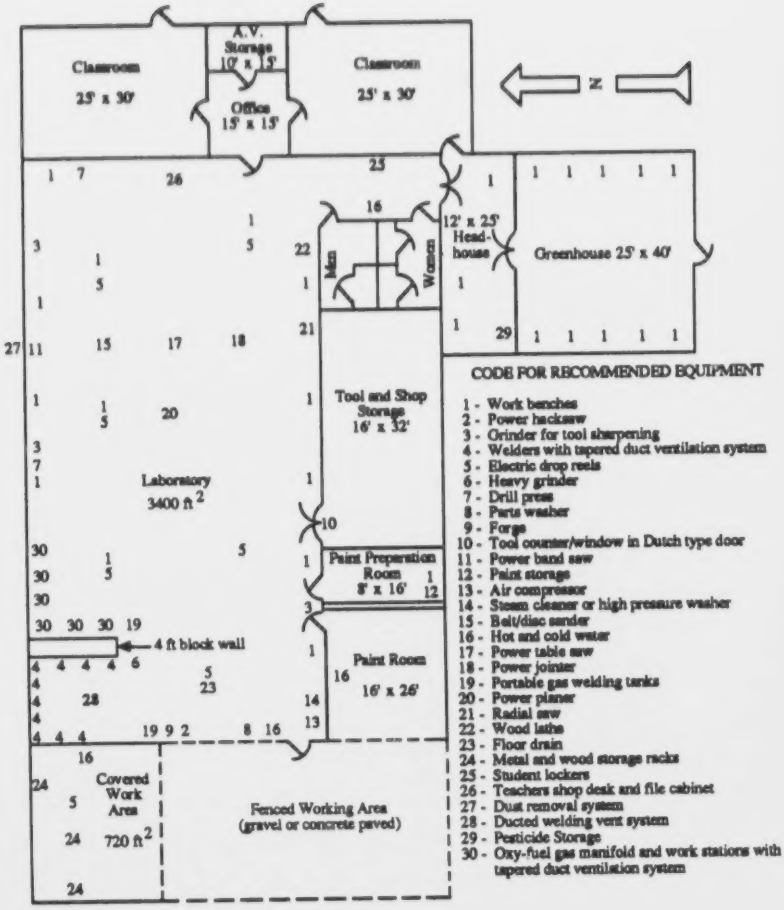
Vocational Agriculture Service
College of Agriculture
University of Illinois
1401 South Maryland Drive
Urbana, Illinois 61801

Vocational Education Productions
California Polytechnic State University
San Luis Obispo, California 93407

Vocational Media Associates
Prentice Hall Media
Box 1050
Mount Kisco, New York 10549-9989

APPENDIX D

RECOMMENDED FACILITY PLANS AND INCLUSIONS



CODE FOR RECOMMENDED EQUIPMENT

1 - Work benches
2 - Power hacksaw
3 - Grinder for tool sharpening
4 - Welders with tapered duct ventilation system
5 - Electric drop reels
6 - Heavy grinder
7 - Drill press
8 - Parts washer
9 - Forge
10 - Tool counter/window in Dutch type door
11 - Power band saw
12 - Paint storage
13 - Air compressor
14 - Steam cleaner or high pressure washer
15 - Belt/disc sander
16 - Hot and cold water
17 - Power table saw
18 - Power jointer
19 - Portable gas welding tanks
20 - Power planer
21 - Radial saw
22 - Wood lathe
23 - Floor drain
24 - Metal and wood storage racks
25 - Student lockers
26 - Teachers shop desk and file cabinet
27 - Dust removal system
28 - Ducted welding vent system
29 - Pesticide Storage
30 - Oxy-fuel gas manifold and work stations with tapered duct ventilation system

RECOMMENDED INCLUSIONS

Exhaust

- paint preparation room should have exhaust fan and vented storage cabinet.
- welding stations should be exhausted away from students using tapered duct ventilation system with drops to each welding station.

Floors

- laboratory floor should be made of concrete with sufficient thickness to support weight of the heavest load the facility will encounter. All concrete floors should be sealed.

Shop drain

- drain should be provided with drainage into a settling basin.

Wash area

- exterior concrete wash areas should be provided with drainage into a settling basin.

Walls

- height of walls 16' minimum or dictated by machinery size.
- should be treated with epoxy paint or equivalent material for cleaning purposes. Treated area should be minimum of 7' high.
- color should be light, example yellow, white, etc.

Doors

- equipment entrance doors should be 16' wide and 14' high.
- exterior passage way doors should be provided adjacent to equipment entrance doors.

Doors (continued)	- parts storage and tool-storage room doors should be 42" wide or a double door.
Electrical Service	- minimum of 600 AMP service should be provided.
	- master shut-off switch should be provided.
	- ground fault interrupters should be wired into circuitry.
	- welding outlet should be provided at laboratory center and rear entrance as well as in welding areas.
Heat	- should have provisions for independent heat control for the laboratory.
Lighting	- general lighting requirements for the laboratory 50-100 foot candles.
Loading Ramp	- should be provided and located outside the fenced-in area with 360 access.
Hot Water	- should be provided in hand washing and equipment cleaning areas.
Compressed Air	- outlets should be located at 40' intervals around exterior walls.
	- compressor should be located in out-of-the-way storage area if possible.
Safety Glasses	- storage and sanitary cabinet should be located at the primary student entrance area of the laboratory.
Roof Strength	- roof trusses should be of sufficient strength to support chain hoists and other equipment for lifting agricultural equipment.

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